

Application No. 10/807,847

Response dated November 17, 2005

Reply to Office Action dated August 24, 2005

Attorney Docket No. 0815-040048

AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) An impeller lock for limiting axial movement of an impeller on a shaft, comprising:

a split ring member having a body defining a first engagement tab adapted to engage the impeller, a second engagement tab adapted to engage the shaft supporting the impeller, and a third engagement tab adapted to engage a shaft sleeve disposed about the shaft, when the ring member is positioned about the shaft and between the impeller and shaft sleeve.

2. (Previously Presented) The impeller lock of claim 1, wherein the second engagement tab lies along a longitudinal axis of a transverse cross-section through the ring member.

3. (Previously Presented) The impeller lock of claim 2, wherein the third engagement tab extends along an axis substantially perpendicular to the longitudinal axis.

4. (Currently Amended) The impeller lock of claim 2 An impeller lock for limiting axial movement of an impeller on a shaft, comprising:

a ring member having a body defining a first engagement tab adapted to engage the impeller, a second engagement tab adapted to engage the shaft supporting the impeller, and a third engagement tab adapted to engage a shaft sleeve disposed about the shaft, when the ring member is positioned about the shaft and between the impeller and shaft sleeve, wherein the first engagement tab is formed as a hook with a prong adapted to engage the impeller, ~~the prong extending along an axis substantially parallel to the longitudinal axis~~.

5. (Previously Presented) The impeller lock of claim 1, wherein the first engagement tab and the second engagement tab are formed on an inner side of the ring member.

6. (Currently Amended) ~~The impeller lock of claim 5, An impeller lock for limiting axial movement of an impeller on a shaft, comprising:~~

a ring member having a body defining a first engagement tab adapted to engage the impeller, a second engagement tab adapted to engage the shaft supporting the impeller, and a third engagement tab adapted to engage a shaft sleeve disposed about the shaft, when the ring member is positioned about the shaft and between the impeller and shaft sleeve, wherein the first engagement tab and the second engagement tab are formed on an inner side of the ring member, wherein an outer side of the ring member is substantially planar annular.

7. (Cancelled)

8. (Currently Amended) An impeller lock assembly for limiting axial movement of an impeller on a shaft, comprising:

the shaft;
the impeller disposed about the shaft; a shaft sleeve disposed about the shaft and spaced axially from the impeller; and

a split ring member disposed about the shaft between the impeller and shaft sleeve, the ring member having a body defining a first engagement tab engaging the impeller, a second engagement tab engaging the shaft, and a third engagement tab engaging the shaft sleeve, the shaft sleeve securing the ring member to the shaft via the third engagement tab such that axial movement of the impeller on the shaft is limited during rotation of the impeller.

9. (Previously Presented) The impeller lock assembly of claim 8, wherein the second engagement tab lies along a longitudinal axis of a transverse cross-section through the ring member.

10. (Previously Presented) The impeller lock assembly of claim 9, wherein the third engagement tab extends along an axis substantially perpendicular to the longitudinal axis.

11. (Currently Amended) ~~The impeller lock assembly of claim 8~~ An impeller lock assembly for limiting axial movement of an impeller on a shaft, comprising:

the shaft;

the impeller disposed about the shaft; a shaft sleeve disposed about the shaft and spaced axially from the impeller; and

a ring member disposed about the shaft between the impeller and shaft sleeve, the ring member having a body defining a first engagement tab engaging the impeller, a second engagement tab engaging the shaft, and a third engagement tab engaging the shaft sleeve, the shaft sleeve securing the ring member to the shaft via the third engagement tab such that axial movement of the impeller on the shaft is limited during rotation of the impeller, wherein the first engagement tab is formed as a hook with a prong, the prong engaging the impeller.

12. (Previously Presented) The impeller lock assembly of claim 11, wherein the prong engages a mating hook defined by the impeller body.

13. (Previously Presented) The impeller lock assembly of claim 8, wherein the first engagement tab and the second engagement tab are formed on an inner side of the ring member.

14. (Currently Amended) ~~The impeller lock assembly of claim 13~~ An impeller lock assembly for limiting axial movement of an impeller on a shaft, comprising:

the shaft;

the impeller disposed about the shaft; a shaft sleeve disposed about the shaft and spaced axially from the impeller; and

a ring member disposed about the shaft between the impeller and shaft sleeve, the ring member having a body defining a first engagement tab engaging the impeller, a second engagement tab engaging the shaft, and a third engagement tab engaging the shaft sleeve, the shaft sleeve securing the ring member to the shaft via the third engagement tab such that axial movement of the impeller on the shaft is limited during rotation of the impeller, wherein the first engagement tab and the second engagement tab are formed on an

inner side of the ring member and, wherein an outer side of the ring member is substantially planar annular.

15. (Previously Presented) The impeller lock assembly of claim 14, wherein the outer side of the ring member lies substantially coincident with outer surfaces of the shaft sleeve and impeller hub.

16. (Cancelled)

17. (Previously Presented) The impeller lock assembly of claim 8, wherein opposing sides of the ring member abut the impeller and shaft sleeve.

18. (Currently Amended) ~~The impeller lock assembly of claim 8 An impeller lock assembly for limiting axial movement of an impeller on a shaft, comprising:~~

the shaft;

the impeller disposed about the shaft; a shaft sleeve disposed about the shaft and spaced axially from the impeller; and

a ring member disposed about the shaft between the impeller and shaft sleeve, the ring member having a body defining a first engagement tab engaging the impeller, a second engagement tab engaging the shaft, and a third engagement tab engaging the shaft sleeve, the shaft sleeve securing the ring member to the shaft via the third engagement tab such that axial movement of the impeller on the shaft is limited during rotation of the impeller, wherein the second engagement tab engages a groove in the shaft, and the third engagement tab engages a groove in the shaft sleeve.

19. (Currently Amended) ~~The impeller lock assembly of claim 8 An impeller lock assembly for limiting axial movement of an impeller on a shaft, comprising:~~

the shaft;

the impeller disposed about the shaft; a shaft sleeve disposed about the shaft and spaced axially from the impeller; and

a ring member disposed about the shaft between the impeller and shaft sleeve, the ring member having a body defining a first engagement tab engaging the impeller, a

second engagement tab engaging the shaft, and a third engagement tab engaging the shaft sleeve, the shaft sleeve securing the ring member to the shaft via the third engagement tab such that axial movement of the impeller on the shaft is limited during rotation of the impeller, wherein the second engagement tab engages a groove in the shaft.

20. (Previously Presented) The impeller lock assembly of claim 8, wherein the third engagement tab engages a groove in the shaft sleeve.

21. (Currently Amended) A method of limiting axial movement of an impeller on a shaft, comprising:

positioning a split ring member about the shaft adjacent the impeller, the ring member having a body defining a first engagement tab for engaging the impeller, a second engagement tab for engaging the shaft, and a third engagement tab for engaging a shaft sleeve to be disposed about the shaft;

joining the ring member to the impeller and shaft, such that the first engagement tab engages the impeller and the second engagement tab engages the shaft; and

joining the shaft sleeve to the shaft, such that the third engagement tab engages the shaft sleeve, the shaft sleeve securing the ring member to the shaft via the third engagement tab such that axial movement of the impeller on the shaft is limited during operation of the impeller.

22. (Currently Amended) The method of claim 21 A method of limiting axial movement of an impeller on a shaft, comprising:

positioning a ring member about the shaft adjacent the impeller, the ring member having a body defining a first engagement tab for engaging the impeller, a second engagement tab for engaging the shaft, and a third engagement tab for engaging a shaft sleeve to be disposed about the shaft;

joining the ring member to the impeller and shaft, such that the first engagement tab engages the impeller and the second engagement tab engages the shaft; and

joining the shaft sleeve to the shaft, such that the third engagement tab engages the shaft sleeve, the shaft sleeve securing the ring member to the shaft via the third engagement tab such that axial movement of the impeller on the shaft is limited during

operation of the impeller, wherein the first engagement tab is formed as a hook with a prong, such that the prong engages the impeller when the ring member is joined to the impeller and shaft.

23. (Previously Presented) The method of claim 22, wherein the prong engages a mating hook defined by the impeller body.

24. (Currently Amended) The method of claim 21 A method of limiting axial movement of an impeller on a shaft, comprising:

positioning a ring member about the shaft adjacent the impeller, the ring member having a body defining a first engagement tab for engaging the impeller, a second engagement tab for engaging the shaft, and a third engagement tab for engaging a shaft sleeve to be disposed about the shaft;

joining the ring member to the impeller and shaft, such that the first engagement tab engages the impeller and the second engagement tab engages the shaft; and

joining the shaft sleeve to the shaft, such that the third engagement tab engages the shaft sleeve, the shaft sleeve securing the ring member to the shaft via the third engagement tab such that axial movement of the impeller on the shaft is limited during operation of the impeller, wherein the second engagement tab engages a groove in the shaft.

25. (Previously Presented) The method of claim 21, wherein the third engagement tab engages a groove in the shaft sleeve.

26. (Previously Presented) A method of retrofitting an impeller-shaft connection for limiting axial movement of the impeller on the shaft, comprising:

providing the impeller disposed about the shaft, the impeller-shaft connection further including a shaft sleeve disposed about the shaft and spaced axially from the impeller;

removing the impeller and shaft sleeve from the shaft; forming respective grooves in the shaft and in the shaft sleeve;

replacing the impeller on the shaft;

positioning a ring member about the shaft adjacent the impeller, the ring member having a body defining a first engagement tab for engaging the impeller, a second

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engagement tab for engaging the shaft, and a third engagement tab for engaging the shaft sleeve;

joining the ring member to the impeller and shaft, such that the first engagement tab engages the impeller and the second engagement tab engages the groove in the shaft; and

replacing the shaft sleeve on the shaft, such that the third engagement tab engages the groove in the shaft sleeve, the shaft sleeve securing the ring member to the shaft via the third engagement tab such that axial movement of the impeller on the shaft is limited during operation of the impeller.